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MANITOBA

Environmental Management Division

Environmental Control Services

Waste Management

1982 Environmental Accident Statistics

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MG-4507

1982 ENVIRONMENTAL ACCIDENT STATISTICS

With the establishment of a separate 24 hour reporting telephone number in November 1981 for environmental accident reports, it was anticipated that the number of calls received in 1982 would show a marked increase. The 1982 statistics confirm this prediction with a 60% increase in the number of calls received on the emergency reporting system. The actual number of reported petroleum and chemical releases increased by 14% to 167. The other additional calls received were primarily complaints or enquiries which did not involve actual emergency situations.

The types of incidents reported did not vary significantly from previous years. The major exceptions were additional reports of chemical accidents received from segments of industry which were reporting more frequently after the new emergency number was publicized.

This report contains a more detailed statistical breakdown than in previous years. The narrative content has been reduced proportionately. A discussion of the statistics is included at the end of the report.

The role of the Environmental Management Division in environmental accident response remains essentially the same as in previous years. The Division is responsible for assessing the hazards to the environment and public health associated with a dangerous goods accident and ensuring that these hazards are minimized. To fulfill this responsibility, the Environmental Emergency Response Team will normally dispatch a representative to the site of an accident or ensure that another agency has

personnel on-site to carry out the required functions. On-site activities may include - monitoring of air, water and soil, liaising with industry and government personnel, advising on clean-up methods and follow-up monitoring where required. During 1982, the Emergency Response Team spent approximately 200 staff days on on-site response to emergencies.

1982 REPORTING STATISTICS

REPORTS ORIGINATING FROM:

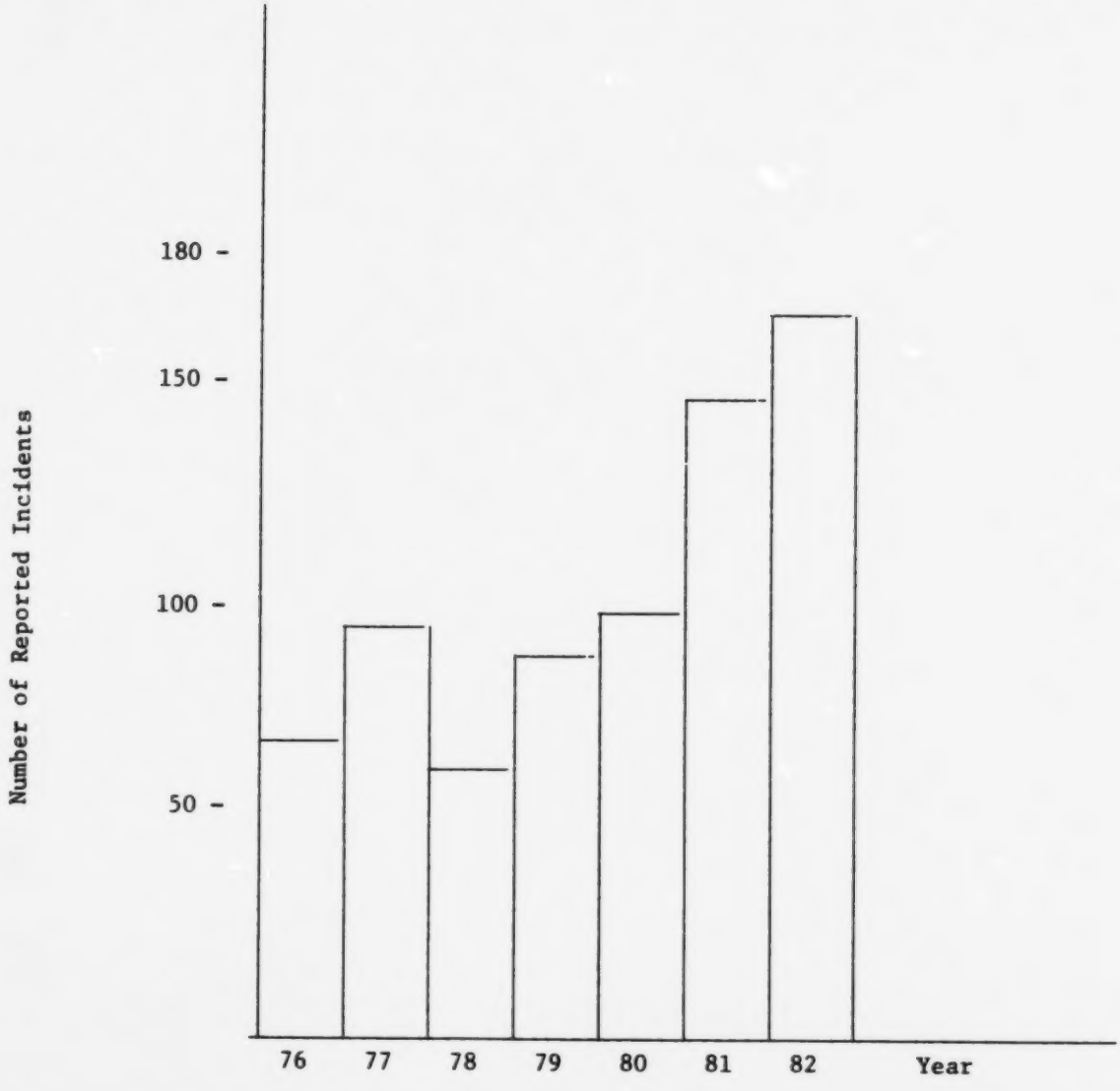
Industry	128
Police	18
Fire Departments	53
Health Inspector	1
Public	26
Federal/Provincial Agencies	21
Local Authority	6
Employee/Union	4
Other	5
	262

REPORTS RECEIVED:

On "944-4888" Emergency Line	176
Via Emergency Measures Organization	9
On Environmental Management Division Head Office Line	61
By Health Inspector	8
By Environment Canada	3
By Canutec	1
By Elected Representatives	3
By Community Relations Branch	1
	262

Total Reports in 1981 - 163

NOTE: These are the agencies who initially received the report from the originator. All these reports were ultimately forwarded to the Emergency Response Team personnel.



ANNUAL COMPARISON - TOTAL REPORTED INCIDENTS

PETROLEUM SPILLS - 1982

(1981 figures in brackets)

Category	Number of Incidents		Total Loss in Litres		Average Loss in Litres per Incident	
Transfer	34	(31)	45789	(63387)	1347	(2045)
Transport	8	(11)	78600	(42962)	9825	(3905)
Equipment failure	25	(19)	101005	(91957)	4040	(4840)
Vandalism	4	(2)	1822	(19613)	455	(9806)
Miscellaneous	28	(27)	29616	(52600)	1058	(1948)
TOTAL	99	(90)	256832	(270519)	2594	(3005)

REMARKS

1) Transfer spills include 20 storage tank overfills with a total product loss of 37,075 litres. Other transfer spills resulted from overfilled tank truck compartments and broken delivery hoses and fittings.

2) Six of the transport spills involved overturned tank trucks, with an average product loss of 11,600 litres per incident.

3) Ten incidents of equipment failure resulted from leaks in storage tanks and associated piping.

4) The vandalism category includes two instances of theft of gasoline where delivery hoses were left on the ground by the vandals with the product still flowing.

5) Eighteen incidents in the miscellaneous category involved vehicular accidents where the vehicle's fuel tank was ruptured. These spills averaged less than 100 litres per incident, and ranged from 70 litres to 900 litres.

CHEMICAL ACCIDENTS - 1982

(1981 figures in brackets)

Category	Number of Incidents	
Transport	*15	(2)
Equipment failure	*30	(17)
Vandalism	0	(15)
Fire	7	(2)
Intentional Dumping	1	(0)
Miscellaneous	15	(20)
TOTAL	68	(56)

*In previous years all container and cargo tank leaks were included in the Equipment Failure category. Commencing with this report, all container leaks which occurred while the container was in transit will be reported in the transport category. Using the previous procedure, the 1982 incidents could be divided into 7 transport incidents and 38 cases of equipment failure.

MAJOR CHEMICAL PRODUCTS INVOLVED IN 1982 INCIDENTS

Chemical	Number of Incidents
PCB	17
Anhydrous Ammonia	5
Pesticides	8
Fertilizer (granular and liquid)	4
Radioactive Materials	5
Refrigerant Gas	3
Other Compressed Gas	8
Non-PCB Dielectric Fluid	5
Others	13
TOTAL	68

REMARKS

1) Transport incidents included 2 derailments, 5 truck overturns, 3 cargo tank leaks on rail cars and trucks, and 5 damaged containers in rail cars and trucks.

2) Nineteen of the Equipment Failure incidents involved leaking or damaged electrical equipment. Five incidents resulted from valve leaks on pressure vessels, and three others were caused by broken refrigerant lines.

3) The average product loss from the PCB oil spills was less than 5 litres per incident and ranged from neglible quantities to 12 litres.

4) Five of the miscellaneous incidents involved leaking containers in storage in laboratories and warehouses. An additional three incidents occurred while chemicals were being handled or transferred in a storage area.

5) Six of the seven situations involving fires occurred when fire impacted a structure or container where chemicals were stored.

6) The incident of intentional dumping was treated as an emergency as it involved a substantial quantity of acid waste which had been dumped in an area where it was considered a hazard to the public.

NON-EMERGENCY CALLS

Industry Reports of Minor Atmospheric Releases from Process Operations	48
Odour Complaints - Atmospheric	11
Odour Complaints - In Sewers and Basements	8
Restaurant Fires	3
Other Complaints	2
Other Enquiries	6
Reports of Minor Incidents	17
	95

REMARKS

1) All reports of industrial releases to the atmosphere and complaints of air-borne odours were forwarded to the Air Pollution Control Section of the Environmental Management Division for follow-up.

2) Some minor incident reports were of a precautionary nature, and did not involve an actual spill or leak.

3) Restaurant fire reports are received on the emergency line after hours under an agreement with the Winnipeg Fire Department. These reports are forwarded to a Public Health Inspector for follow-up.

RESPONSE MECHANISMS

First On-Site Response Agency*	No. of Incidents
Provincial Environmental Emergency Response Team (See Remark 1)	67
Public Health Inspector	22
Workplace Safety and Health	7
Environment Canada (See Remark 2)	8
Manitoba Cancer Treatment and Research Foundation	4
Others	3
No On-Site Response Required	56
TOTAL	167

* This refers to the first agency to carry out an on-site assessment of environmental and public health hazards associated with an incident. In some instances, on-site response may not occur until some time after termination of the incident. The actual first responders in most cases were the Fire and Police Departments.

REMARKS

1) In some cases, other agencies provided an on-site emergency response

in conjunction with the Environmental Emergency Response Team. This occurred primarily with chemical accidents where the services of the Environmental Management and Workplace Safety and Health Divisions were both required.

2) This category includes incidents which were reported through the provincial system but were forwarded to Environment Canada for follow-up. These cases occurred in areas under Federal jurisdiction. In remote locations, Environment Canada obtained on-site assistance from other agencies located in the area.

3) The 56 incidents which did not require an on-site response were primarily small petroleum spills or incidents of short duration which did not require any remedial action.

DISCUSSION

The most significant changes in the 1982 statistics are the total number of calls received and the proportion of calls received on the 24 hour reporting system. Both of these can be attributed to the establishment of the new environmental emergency reporting number and the publicity campaign used to advise appropriate agencies of the new number. It is notable that in 1980, 50% of the emergency calls were received on the Emergency Measures Organization number. In 1982, this figure has been reduced to less than 5%, resulting in greater efficiency in processing calls to the Environmental Management Division and a corresponding reduction in the Emergency Measures Organization involvement.

The total number of reported spills in 1982 is somewhat higher than the 1981 figure, continuing the upward trend which started in 1978. The main contributors to the higher total appear to be minor

petroleum spills and leaks from electrical equipment. As indicated previously, some of the increase can be attributed to increased reporting of incidents. For example, the numbers of reports of electrical equipment failure showed a marked increase after the electrical utility companies were contacted directly and advised of the environmental emergency number.

Human error appears to have been less of a factor in the 1982 incidents. One indicator of this trend is the number of petroleum tank overfills. These spills are usually caused by human error and in 1982, overfills accounted for 20% of the petroleum spills, which is one of the lowest percentages on record. The decreased percentage can be attributed to upgraded unloading facilities at some bulk plants, improved product handling procedures and training and safety programs instituted by the petroleum industry.

Similarly, the proportion of chemical accidents caused by human error showed a decrease. In this case, however, the reduction was caused in part by the increase in the number of reported incidents in the Equipment Failure category.

A significant feature in this year's statistics is the increase in the number of chemical and petroleum spills caused by equipment failure. While part of this trend is the result of the increased reporting levels and normal statistical variation, another factor should be considered. With current economic conditions, some industries have been forced to cut-back on non-essential upgrading and replacement of storage and handling equipment. Although it cannot be proven in this report, cut-backs such as this could be contributing to the number of spills. A large percentage of these incidents involve failure of pieces of equipment which must be maintained, upgraded or replaced routinely. If regular

maintenance procedures are curtailed due to lack of adequate resources, the increased probability of a petroleum or chemical spill must be considered.

The number of non-emergency calls received on the environmental emergency line warrants further consideration. At least 75% of these calls had no relevance to the emergency program. Many of these calls were legitimate complaints, enquiries or reports which were directed to the 944-4888 line because it was the only line accessible to the public and industry after office hours.

CONCLUSIONS

Although further monitoring of some accident sites will be required, no long term environmental consequences are anticipated from the petroleum and chemical spills which occurred during 1982.

Clean-up efforts at several accident sites were hampered by the lack of an acceptable disposal facility for contaminated material. The delays involved in locating a suitable disposal site can compound the problems associated with cleaning and restoring an area. The establishment of a suitable disposal facility and interim storage sites will be required before this problem can be alleviated.

Where economic conditions or other factors require a cut-back in maintenance of storage and handling equipment for dangerous goods, the increased potential for a spill or leak must be considered when determining priority area for cuts.

A clearer definition of responsibilities for various agencies would eliminate some of the confusion and misunderstanding which occurs at major accident sites. The adoption of a provincial emergency plan, presently under development, will help to improve the efficient delivery of services in an emergency situation.

The number of non-emergency calls received through the emergency system could be reduced by establishing a separate 24 hour number for enquiries and complaints.

Cooperation between industry and Environmental Management Division contributed to an effective response to many of the incidents in 1982. Further discussions will take place in 1983 to ensure that this cooperative effort is continued and improved upon wherever possible.